

NAG8-210

FNAS/Marshall Elementary Teachers-Fellows Program

FINAL REPORT

August 15, 1991 - August 14, 1992

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Submitted to

National Aeronautics and Space Administration
George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

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Submitted by

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ELEMENTARY TEACHERS-FELLOWS PROGRAM
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MARSHALL ELEMENTARY TEACHER-FELLOWS PROGRAM

FINAL REPORT

Contract No. 5-32729

August 14, 1992

I. Introduction

As part of its program to induce reform in the education systems of Alabama and surrounding areas, particularly in the science and math disciplines, the Institute for Science Education at UAH took the logical next step in the selection of curriculum materials. This is a step in the progression from textbook-lecture methods of instruction toward cooperative student learning through the use of modular units of hands-on science activity.

A substantial amount of tested instructional material is on the market, but the designs of these materials have been to meet varying situations. All available material will not fit equally in a given local situation, a given level of student development or achievement, or the prevailing teacher attitudes and preparation in a specific environment. Thus the intent of this project was to evaluate a series of modular units for use in the Huntsville City and Madison County School Systems. The project was visualized as being guided by educators experienced in hands-on strategies and utilizing teachers from the City and County systems in live classroom situations. The project was anticipated to result not only in the evaluation of modular units but also in the development of cooperative learning experiences in a cadre of teachers who would be expected to provide leadership in the reform of educational systems.

The project, called the Marshall Elementary Teacher-Fellows Program, was supported by a grant of \$12,500 from the Marshall Space Flight Center and by UAH leadership and in-kind services.

II. Project Description

Selection of Coordinator

The coordinator for the project was Tereasa Rollings (attachment 1). She is an experienced secondary school biology teacher who had been selected a year earlier to be Science Resource Specialist for the Madison County School District. This is a new position that was created to help generate improvements in science education. Mrs. Rollings was a member of the Huntsville/Madison County team at the Leadership Training Institute conducted by the National Science Resource Center at the Smithsonian in Washington D.C. during the summer of 1991. The project director had worked with her at the Institute and during early implementation of activity based learning in grades 3-8 in the two local school systems through the Huntsville Alliance for Science Project (HASP). Mrs. Rollings had demonstrated that she could work effectively with the science coordinator for the City schools and with the education coordinator for HASP. She was scheduled to continue her assignment to introduce hands-on learning under HASP and to be a teacher trainer during the 91-92 school year.

Selection of Participating Teachers

The project provided stipends for ten participating teachers. Prior to soliciting nominations, it was determined that there should be equal representation of the two school systems, that each of the six elementary grade levels should be represented and that there should be no more than two teachers at any single grade level. It was further decided that the teachers as a group should reflect a variety of socioeconomic school environments in order to gather information from the total spectrum of city and county schools. The criteria used to select the individual Marshall Elementary Teacher-Fellows were:

- demonstrated successful teaching
- expressed interest in hands-on science instruction
- leadership potential

As part of the selection process the project coordinator consulted with school principals, the elementary school director for the county schools and with the science coordinator and the elementary school director for the city schools. She capitalized upon her own professional linkages and working relationships with individual teachers. Prior to being named as a participant each candidate was interviewed by the coordinator and the expectations for the program were delineated. The ten participants, their schools and grade levels are listed in attachment 2.

Selection of Modular Units

Shortly before the preliminary summer session to select modules, the project director had been advised during a visit to the National Science Resource Center that the Mesa, Arizona school system represents an exemplary modular-based, hands-on science instruction program. A visit was made to the Mesa schools by the project director, the project coordinator and others. This visit played a major role in convincing the Huntsville and Madison County School Systems that they should give serious consideration to a modular based curriculum.

On June 27, 1991 the participants met as a group with the project coordinator at the UAH Institute for Science Education. During this two-hour session they received their formal introduction to the program and to the concept of module based hands-on teaching. The session was opened with an explanation of the project objectives and a video prepared by the Mesa, Arizona School District to describe a modular-based science instruction program.

A primary objective for the session was identification of the modules that would be the basis for training later in the summer and then used in the classroom in September. At this time the Institute for Science Education had not accumulated any modules that could be examined directly and the selection process was based upon trade descriptions. This project provided the initial experience in selecting modules and in the logistics of obtaining kits for modular based instruction. Early selection of modules was deemed essential if we were

to assure that fully supplied kits would be available in time for use during the summer training workshop.

Prior to the session, the project coordinator identified five different module suppliers (attachment 3). These are a commercial firm (Delta Education, Inc.), a university based science curriculum development organization (Lawrence Hall of Science), a science museum (Franklin Institute), an exemplary public school system (Mesa, Arizona) and the National Science Resource Center (NSRC) curriculum development project called Science and Technology for Children (STC). The SCIS (II) modules from the Lawrence Hall of Science and the Delta and Mesa modules date back to the science instruction reform movement following Sputnik. Others are more recent (Franklin Museum) and some are part of a series in the process of being developed under NSF support (FOSS from the Lawrence Hall of Science and STC from NSRC).

Seventeen modules were purchased for housing in the science materials center of the Institute for Science Education. At least three modules suitable for use at each elementary grade level are now available in the institute and all areas of science, i.e. life science, earth science and physical science are included. Each of the five sources for modules identified above was represented in the group selected for classroom testing (attachment 4). The modules tested included all three divisions of science.

Summer Workshop

The workshop was held during the week of August 5-9, 1991 and a detailed agenda for the weeks activities is included as attachment 5. By the end of the workshop each teacher had gained:

- a better understanding of hands-on teaching,
- an introduction to a variety of modules,
- detailed knowledge of one module and
- practice in teaching portions of one module.

Selected literature was used to give the teachers a stronger background in the theories and concepts of hands-on teaching, the merits that have been

demonstrated through research and the issues a school faces in changing to an activity based science curriculum. Assigned readings helped to stimulate discussion and exchange of new techniques that would be useful in future activity based teaching. However the principal method of instruction used during the workshop was demonstration teaching where each teacher learned by doing and by following the example set by peers. The bibliography of reading materials is included as attachment 6.

A field trip to the Marshall Space Flight Center was taken during the workshop. The teachers visited the mock-up of Space Station Freedom, the Mission Control Center, neutral buoyancy tank, robotics lab and shuttle mock-up training facilities. This visit added special meaning to the term Marshall Elementary Teacher-Fellow. It was successful in building a greater understanding by the teachers of the federal government's interest in improving science education and the need for elementary teachers to stimulate interest in science and help all students gain a better understanding of science.

Evaluation Criteria

Using the seventeen modules as references, a comprehensive list of items for use in evaluating ten modules was selected. All teachers participated in determining these common evaluation criteria and incorporating them into a form to be used by each teacher in reviewing her selected module.

The form, which is included as attachment 7, provided a standard approach for making judgments regarding the inherent merit of the chosen activities for teaching elementary science and the degree of success of the module in realizing this potential. The form provided for summary quality judgments as well as specific observations assessed quality and completeness of the teacher resource guide, appropriateness and clarity of the written materials directed to the students, reliability of materials included for students to carry out the activities, sturdiness and manageability of the kit and cost effectiveness of the module.

Classroom Teaching

Each teacher taught a module in her own classroom early in the 1991-92 school year. Approximately eight weeks were required to teach the complete set of activities. During this module implementation stage the project coordinator remained available for assistance as needed, but participating teachers were individually accountable for fulfilling the teaching requirements and conducting the evaluation. The assigned date for completion of both responsibilities was December 31, 1991 and all teachers met the deadline.

The individual evaluations for each of the ten modules were included in the interim report for this grant and are being retained as part of the project record in the files of the Institute for Science Education.

III. Findings

The principal objectives for the project were to:

- evaluate ten modular units for hands-on instruction,
- enhance hands-on instruction capability for selected teachers and
- initiate leadership training for education reform

Table 1 is a list by grade level and source of supply of the ten modules that were evaluated. The extensive information from each form has been reduced to a summary rating of poor, average, good, or excellent for each module and a judgment as to whether the module is recommended for further consideration for inclusion in the local curriculum.

It is emphasized that the evaluations were made in terms of the situation (local goals and the capacity to achieve those goals) in the Huntsville/Madison County school systems at this time, and these evaluations may not be applied generally. Furthermore, this evaluation does not imply a general endorsement or lack of such endorsement by the Institute for Science Education or any sponsor of this program.

TABLE 1**MARSHALL ELEMENTARY TEACHER FELLOWS PROGRAM**

GRADE	UNIT	SOURCE	EVALUATION
K	Aquarium	Delta	Excellent; recommended
K	My Environment	Mesa	Average or less; not recommended
1	Animals	Mesa	Average or less; not recommended
1	Senses	Mesa	Average; not recommended
2	Air	Delta	Good; but not recommended
2	Desert	Mesa	Poor; not recommended
4	Electric Circuits	STC	Excellent; recommended
4	Weather	Mesa	Excellent; recommended
5	Energy	Franklin Institute Museum to go	Excellent; recommended
5	Energy	Lawrence Hall of Science - SCIS (II)	Excellent; but expensive

Five modules were rated as excellent, one good, three average and one poor. Four of the excellent modules are recommended for further consideration for local use. Recommendation for further consideration is withheld from one of the modules rated excellent because of the high cost.

The STC, Franklin Institute and SCIIS (II) units received the highest ratings. In considering a single source for building a curriculum it should be noted that STC covers grades 1-6, but does not include kindergarten. The Franklin Institute and SCIIS (II) modules are limited to grades 3-6. The two Delta units were rated good and excellent, but there was some criticism of the level of difficulty of the material. One Mesa unit was rated excellent, but others were poor to average. The Mesa program is twenty years old and the relatively low ratings for some individual modules suggests that better modules are now being developed.

The project demonstrated that a selected group of local elementary teachers under local guidance can cooperate to introduce activity based science instruction using commercial modules. The participating teachers already were biased toward hands-on science teaching based upon their own classroom experience. The project gave them a better understanding of research findings that support their personal observations and built confidence that hands-on student centered learning is superior to didactic teaching. The project helped demonstrate the feasibility of an elementary science curriculum built around hands-on modules and it helped to stimulate planning to make instruction built upon this type of curriculum a reality in the Huntsville City and Madison County schools.

The ten participants received one week of summer training. Priority during the selection and training process was given to the hands-on instruction objectives because proficiency in hands-on teaching is a necessary prerequisite for any future leadership role. Through this project and others, the levels of experience and understanding of hands-on teaching have increased significantly among all teachers in the two school systems during the past 12 months. Thus the pool for selecting future leaders has risen significantly. The project director, project coordinator and other local project management team members also have become more knowledgeable about attitudes and capabilities of individual teachers.

Conclusions and Recommendations

Commercially available modules offer a reasonable foundation for selecting modules for activity based elementary science instruction. The two local school systems now wish to build a curriculum around modules and plan to introduce one module at each grade level of 2-6 next year. The five modules to be used all were selected from STC and one of those selected was tested under this project.

Building the first curriculum of this type in Alabama will be a demanding task. The leadership of this project and others under the HASP umbrella has the talent and dedication to do the job, but the school systems do not have the resources to address this state and regional need. Networking with school systems in other locations who are facing or have faced a similar change is a necessary ingredient in the formula for success. A small amount of external financial support is needed for this purpose during the next few years. This will assure continued professional growth for the role models and trainers of future Marshall Elementary Teacher-Fellows

A four year time period is necessary for changing from textbook-lecture methods of instruction to cooperative student learning using modular units of hands-on science activity. Experience in this project and others under HASP suggest that teachers will be willing to change if they are given the professional development opportunity required to learn new methods. In order to provide this training, the existing leadership team must be expanded. It is desirable that each school building have a teacher who can play a leadership role in that location. It is recommended that another Marshall Elementary Teacher-Fellow Program be conducted in order to prepare school resource teachers who can facilitate school-wide adoption of modules. It is anticipated that future teacher trainers and curriculum builders will come from this cadre of Marshall Elementary Teacher-Fellows.

IV. Acknowledgements

The support of the MSFC in the initiative for systematic change in the Huntsville and Madison County School Systems is acknowledged gratefully. In

addition to the financial support provided, the indoctrination into what MSFC does was an important stimulus to the teachers who want to contribute to better teaching of science in the future. The Marshall Teacher-Fellows provide MSFC with a continuing link to local education systems at the level where education occurs.

RESUME
TEREASA E. ROLLINGS
1291 Winchester Rd.
Huntsville, AL 35811
Phone: 205-852-6159
Date: October 1, 1991

Education

Bachelor of Science, University of North Alabama, 1971.

Majors: Biology and secondary education

Minor: Chemistry

Teaching certification: Rank II, biology and chemistry

Master of Science, University of Alabama (Huntsville), 1980.

Major emphasis: Electron microscopy and cellular biology

Minor emphasis: Secondary education

Teaching certification: Rank I, biology

Postgraduate studies, Alabama A & M University, 1991.

Teaching certification: Rank I, secondary school supervision

Experience

1990-Present.

Position title: Science resource specialist for the Madison County School System, Huntsville, Alabama (district of 19 schools, approximately 14,000 students, grades K-12)

Responsibilities:

- coordinate system's participation in Huntsville Alliance for Science Project (HASP)
- conduct teacher training sessions for use of HASP hands-on science kits
- provide supervision and assistance in classroom implementation of HASP Kits
- coordinate system's adopt-a-school program
- coordinate the Madison County Science Fair
- serve as facilitator for system's participation in regional and state science fairs
- arrange and conduct science workshops for system teachers
- promote special science programs and opportunities for students in grades K-12

- serve as system representative on the Engineering, Science, and Technology Committee of the Chamber of Commerce
- serve as system representative on Summer Industrial Fellowships for Teachers Program
- facilitate and supervise the purchase of science laboratory equipment
- interview and make recommendations regarding applicants for science teaching positions
- publish a bi-monthly systemwide science newsletter

Supervisor: Mr. Joe Anglin, Superintendent

1972-1990.

Position title: High school science teacher, Madison County High School, Gurley, Alabama (K-12 school of 930 students)

Responsibilities:

- taught biology, human physiology, chemistry I and II and physical science
- served as science department chairman
- sponsored Sigma Xi (honorary science organization), Beta Club, Scholars' Bowl, local and county science fairs, and numerous faculty involvement activities
- served as chairman of systemwide science textbook selection committee, grades K-12
- served as consultant for Madison County School System Science Curriculum Planning Committee
- served as visiting science consultant for SACS accreditation of Bridgeport High School, Bridgeport, Alabama
- served as consultant for UAH Energy Education Idea Book for Science Teachers
- served as cooperating teacher for Athens State College and Alabama A & M University student teacher programs
- served as facilitator for Madison County system-wide in-service meetings.
- served as presenter at the Alabama Science Teachers Conference

Supervisors (Principals):

Dr. Michael Self, 1988-90
Mrs. Betty Burch, 1984-88
Mr. Sam Sullins, 1979-84

Mr. Gordon Solley, 1976-79
Mr. Al Stewart, 1975-76
Mr. Milford Young, 1972-75

1971-1972.

Position title: High school biology teacher, Irwin County High School, Ocilla, Georgia

Supervisor: Mr. Richard Williamson, Principal

Professional Affiliations

- Alabama Science Teachers Association
- National Science Teachers Association
- Madison County Education Association/AEA/NEA
- Association of Supervision and Curriculum Development

Honors and Awards

- Valedictorian, Buckhorn High School, New Market, AL, 1967
- Graduated cum laude, University of North Alabama, 1971
- Biology Honor Scholar, University of Ala. (Huntsville), 1980
- Outstanding Young Educator nominee, Huntsville Jaycees, 1978
- Outstanding Young Huntsvillian nominee, Jaycees, 1983
- Excellence in Science Teaching Presidential Awards nominee, Alabama Science Teachers Association, 1984
- Outstanding High School Teacher, University of Alabama in Huntsville, 1989
- Teacher of the Year Supporting Aerospace Programs, American Institute of Aeronautics and Astronautics, 1990
- Outstanding Science Educator, Sigma Xi Scientific Research Society, UAH, 1991

MARSHALL ELEMENTARY TEACHERS FELLOWS PROGRAM

Interim Report

February 17, 1992

Project Description

Funding for the Marshall Elementary Teachers Fellows Program was awarded by Marshall Space Flight Center to the University of Alabama in Huntsville (UAH) Institute for Science Education to assist in its pioneering efforts of creating exemplary science programs in the school systems of Huntsville City and Madison County. The main goal of this program is to provide an information resource base for the future selection and use of modular hands-on science units for use in the two school systems (attachment 1).

A five day professional development workshop was held during which a selection of nationally recognized science curricula modular units for grades K-5 were previewed. Each Marshall Fellow selected a kit for workshop presentation and classroom implementation. A comprehensive evaluation on the implementation will be conducted by the Marshall Education Coordinator during the 1991-92 school year. Information from individual evaluations will be distilled to provide general guidance for preparing for a total system change to modular units.

Project Preparation

The criteria for being selected as a Marshall Fellow included previous demonstration of successful teaching and interest in hands-on science instruction. Selection of participants for the Marshall Fellows Program was based upon recommendations made from supervisors and the personal knowledge of the Marshall Education Coordinator. Five were chosen from each school system. Effort was made to have even representation of schools from a variety of socioeconomic communities. Each candidate was given an overview of the program during the interview. Upon acceptance of the position, each candidate was sent a packet which contained (1) a sketch of the Marshall program, (2) a listing of names, addresses, grade, and school of all participants, (attachment 2) and (3) notification to attend a two hour orientation meeting on June 27, 1991.

The Marshall Fellows Orientation was held at the UAH Institute for Science Education. After a brief introduction and get-acquainted period, the participants were given an overview of existing efforts to bring about a change in the way science is taught in the classroom. The need for hands-on science instruction was discussed, as well as the elements necessary for an exemplary science program. The hands-on science program of the Mesa, Arizona Public School System (which is nationally recognized as exemplary) was previewed with much interest. A few science modules were used to exemplify the modular unit concept.

In order to determine the best sources from which to obtain modular units to be researched by the Marshall Fellows program, the group previewed material and information that had been obtained directly from the 1991 Elementary Science Leadership Workshop held in July at the Smithsonian Institute under the sponsorship of the National Science Resource Center. Also, catalog descriptions of the various modular units available from the major hands-on science curriculum developers proved to be invaluable in providing a total picture of the array of units available. Those that were determined to provide the best in hands-on science units are Delta Education, Franklin Institute, Lawrence Hall of Science, National Science Resource Center, and the Mesa Resource Center (attachment 3). Each participant, with the Coordinator's approval, selected a unit appropriate for the respective grade level to be ordered for review and presentation during the week-long workshop in August. In addition, recommendations of other modular units that would correlate well with the Alabama Science Course of Study were submitted by the Fellows. Several of these were also ordered by the Coordinator (attachment 4).

During the first week of July, orders were placed for the selected units. The units covered all grade levels K-5 and allowed for good representation of the various curriculum products available. All units arrived by the week of workshop, August 5-9, 1991.

Workshop Activities

During the week of the workshop, each Marshall Fellow gave an interesting and informative presentation of a selected unit (attachment 5). The presentations involved teaching a small portion of the unit (usually one activity) to the rest of the group just as the teacher would later present to students at school. This provided practice in teaching

hands-on science and afforded all a chance to be exposed to a variety of curriculum methods and topics.

In addition to unit presentations, each workshop participant led the group in a discussion that was based upon articles selected from education journals that focused on various aspects of exemplary hands-on science instruction (attachment 6). This daily activity served to help the participants establish a sound perception of what exemplary elementary science programs should entail. It was rewarding to observe the evolution in thinking of the participants regarding this important concept as "before" and "after" brainstorming sessions on this topic demonstrated.

A special highlight of the week was a field trip to tour facilities at Marshall Space Flight Center. This included a visit to the mock-up of Space Station Freedom, the Mission Control Center, neutral buoyancy tank, robotics lab, and shuttle mock-up training facilities. In addition to being very informative, the trip served to strengthen the bond between the Marshall Fellows and MSFC. They came back with a greater sense for the interest that government and industry have in education and with a greater sense of being an important component in preparing students for the workforce of the 21st century.

Fall Activities

Each Marshall Fellow has received a unit evaluation form which was developed during the workshop using the various curriculum guides provided with the units as references (attachment 7). The evaluation guideline is being used to evaluate each science unit as it is implemented in the classroom. Implementation is to take place during the fall school term with ongoing feedback to the Education Coordinator. The findings of the evaluations, along with recommendations, will be compiled into a final report for submission to the Project Director.

MARSHALL ELEMENTARY TEACHERS FELLOW PROGRAM

VISION: Utilizing the UAH Institute for Science Education to create an exemplary elementary science program in Huntsville and to export this model to other school systems.

OBJECTIVE: Identify and contribute to the development of a group of science education leaders in Huntsville and Madison County schools.

PROGRAM:

- Select ten elementary teachers as Marshall Fellows.
- Award stipends of \$500 to each Marshall Fellow.
- Conduct five days of summer "Professional Development".
- Maintain school year follow-up.
- Appoint a coordinator-instructor for the project
- Liaison with Huntsville Alliance for Science Project.

GOAL: Move from textbook activities to modular unit of hands-on science.

ASSIGNMENTS:

- Select units from nationally developed and tested materials.
- Prepare to teach the units.
- Teach units during the school year (Fall 1991).
- Evaluate units for local adoption.

DELIVERABLE: A report assessing at least one unit per each of grades K-5 based upon experiences of ten teachers from the Huntsville and Madison County School Systems who will each teach one unit during the 1991-92 school year.

CONCLUSION: The report will assist the Marshall Space Flight Center in evaluating how it can participate most effectively in the enhancement of the local education environment.

ADMINISTRATION:

- Director, Dr. John C. Wright (in-kind contribution)
- Coordinator, Tereasa Rollings, Science Coordinator for Madison County.
- HASP liaison, Arlene Childers, (in-kind contribution)

MARSHALL FELLOWS

<u>GRADE</u>	<u>NAME/ADDRESS</u>	<u>PHONE</u>	<u>SCHOOL</u>
K	Ellen McKee 105 Stacy Circle Huntsville, AL 35811	852-1591	East Clinton
K	Shelly Griffin 107 Betty Garrett Drive Madison, AL 35758	772-3955	West Madison
1	Sharon Capuzzo 149 Buckeye Lane Brownsboro, AL 35741	533-4481	Morris
2	Claudia Hyde 6541 Pulaski Pike Huntsville, AL 35810	859-4336	Madison County
2	Melinda Holloway 2200 Cheshire Circle Huntsville, AL 35803	880-8262	Highlands
3	Debbie Kilbourn 1913 Capri Drive Huntsville, AL 35811	533-3188	Chapman
4	Laura Faulk P.O. Box 154 New Market, AL 35761	379-2386	Walnut Grove
4	Ada Turner 478 Mt. Lebanon Road Toney, AL 35773	851-7244	Monrovia
5	Vicki Waring 2225 Golf Road #406 Huntsville, AL 35802	883-8125	Harvest
5	Sara King 3103 Dahlia Ct. Huntsville, AL 35810	852-3578	Blossomwd

MAJOR HANDS-ON SCIENCE CURRICULUM DEVELOPERS

**Delta Education, Inc.
P. O. Box 950
Hudson, NH 03051**

**Lawrence Hall of Science (FOSS; SCIIS)
University of California
Berkeley, CA 94720**

**Franklin Institute (Museum-To-GO)
20th & Parkway
Philadelphia, PA 19100**

**National Science Resource Center (STC)
Arts & Industries Building, Rm. 1201
Smithsonian Institution
Washington, DC 20560**

**Science Resource Center
Mesa Public Schools
143 S. Alma School Rd.
Mesa, AZ 85201-1103**

**SELECTED SCIENCE MODULES
MARSHALL FELLOWS PROGRAM**

Delta Science Programs

From Seed to Plant	K-1	Rollings
Observing an Aquarium	K-1	Kilbourn
Air	2-3	Holloway
Classroom Plants	2-3	Rollings
Weather Instruments	3-5	Rollings

FOSS (Full option Science System, Lawrence Hall of Science)

Earth Materials	3-4	Rollings
Physics of Sound	3-4	Rollings
Environments	5-6	Rollings

Museum-to-Go (Franklin Institute)

Energy Sources	4-6	King
Meteorology	4-6	Rollings

STC (Science and Technology for Children, National Science Resource Center)

Electric Circuits	4	Turner
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SCIS(II) (Science Curriculum Improvement Study)

Energy Sources	5	Waring
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Mesa Science Programs

Beginning Senses	K	McKee
My Environment	K	Griffin
Animals in my World	1	Capuzzo
Living in the Desert	2	Hyde
Due to the Weather	4	Faulk

MARSHALL FELLOWS WORKSHOP
UAH Institute for Science Education
August 5-9, 1991, 9:00 am-3:00 pm

Monday, August 5

- 9:00 Welcome and registration - Tereasa Rollings, Coordinator
Overview/expectations/literature assignments
- 9:30 Elements of an Exemplary Science Program - Dr. John Wright
- 10:30 Activity: Physics of Sound (FOSS)
Integrating cooperative learning with
hands-on science
- 12:00 Lunch - on your own
- 1:00 Activity: Physics of Sound (continued)
- 2:00 Kit preview/inventory
Kit presentation sign up

Tuesday, August 6

- 9:00 Literature Reports/Discussion (Instructor, 1987):
"More Science! Why Now?"
"What is Hands-on Science?"
"Hands-on Tips for Teachers"
- 10:00 Cooperative Learning Strategy: Assessing Improvement in
Cooperative Learning
- 12:00 Lunch - on your own
- 1:00 Kit Presentation #1 - "Air" (Delta) - Melinda Holloway
- 2:00 Kit Presentation #2 - "Energy Sources" (Franklin Inst.) -
Sara King

Wednesday, August 7

- 9:00 Literature Reports/Discussion:
"Activities, Not Textbooks: What Research Says
about Science Programs" (Principal, 1983)
"Teaching for Conceptual Change: Confronting Children's
Experience" (Phi Delta Kappan, 1990)
- 9:30 Kit Presentation #3 - "Living in the Desert" (Mesa) -
Claudia Hyde
- 10:30 Kit Presentation #4 - "Observing an Aquarium" (Delta) -
Debbie Kilbourn
- 11:30 Lunch - Resource Center
- 1:00- Tour: Marshall Space Flight Center
- 3:00

Thursday, August 8

- 9:00 Kit Presentation #5 - "Electric Circuits" (NSRC) -
Ada Moore
- 10:00 Literature Reports/Discussion:
"Teaching Science by Posing Problems" (Prospects, '70)
"Helping Teachers Teach Science: The Need for Teacher
Support Systems" (The National Elementary
Principal, 1980)
"The Character of Elementary School Science" (Science
and Children, 1987)
- 11:00 Kit Presentation #6 - "My Environment" (Mesa) -
Shelly Griffin
- 12:00 Lunch - on your own
- 1:00 Kit Presentation #7 - "Animals in My World" (Mesa) -
Sharon Cappuzo
- 2:00 Kit Presentation #8 - "Due to the Weather" (Mesa) -
Laura Faulk

Friday, August 9

- 9:00 Literature Reports/Discussion:
"The Right Test for Hands-on Learning?" (Science
and Children, 1987)
"You Can Teach It. Can You Test It?" (Instructor, '87)
- 9:30 Kit Presentation #9 - "Energy Sources" (SCIIS) -
Vicki Waring
- 10:30 Kit Presentation #10 - "Beginning Senses" (Mesa) -
Ellen McKee
- 11:30 Elements of an Exemplary Science Program Revisited -
Dr. Wright
- 11:50 Wrap up/Evaluation

BIBLIOGRAPHY

Elstgeest, Jos. (1970). "Teaching Science by Posing Problems". Prospects, Vol. VIII. No. 1.

Hein, George E. (October, 1987). "The Right Test for Hands-on Learning?". Science and Children.

Instructor, Special Issue. (1987). "More Science! Why Now?", "What is Hands-on Science?", "Hands-on Tips for Teachers", "You Can Teach It, Can You Test It?".

Lapp, Douglas A. (January, 1980). "Helping Teachers Teach Science: The Need for Teacher Support Systems". The National Elementary School Principal.

Mechling, Kenneth R. and Donna L. Oliver. (March, 1983). "Activities, Not Textbooks: What Research Says about Science Programs". Principal.

Rutherford, F. James. (January, 1987). "The Character of Elementary School Science". Science and Children.

Watson, Bruce and Richard Konicek. (May, 1990). "Teaching for Conceptual Change: Confronting Children's Experience". Phi Delta Kappan.

MARSHALL ELEMENTARY TEACHERS FELLOWS PROGRAM**Unit Evaluation - Final Report**

Name of unit _____ Evaluator's Name _____

Grade level of unit _____ Total cost of unit _____

Institution/project that prepares unit _____

Please check (✓) the following items that you found to be EFFECTIVE characteristics of the unit.**TEACHER RESOURCE GUIDE**

For the unit as a whole did the resource guide contain:

_____ table of contents?

_____ unit overview?

_____ overall statement of purpose/objectives?

_____ background information on subject?

_____ information on collaborative group procedures?

_____ complete materials list of nonconsumables and consumables?

_____ additional resources listed?

books? _____ films? _____ software? _____ other? _____

For the individual lessons within the unit did the guide give:

_____ lesson overviews?

_____ statement of purpose/objectives?

_____ statement of science concepts to be learned?

_____ statement of science thinking processes to be used?

_____ list of materials needed?

_____ adequate preparation information?

_____ adequate procedural information?

_____ provisions for interdisciplinary activities?

vocabulary? _____ language? _____ math? _____ music? _____

social science? _____ visual art? _____ other? _____

_____ reflecting activities at end of lesson?

recall questions? _____ open-ended questions? _____

integrating questions? _____ other? _____

Was the teacher resource guide easy to read? _____

Please rate the guide by marking an X on the following scale:

	1	2	3	4	5	
Poor						Excellent

Comments regarding the teachers resource guide: _____

_____ (You may use the back of this sheet.)

STUDENT ACTIVITY MATERIALS

_____ appropriate physical structure/layout?

readability? _____ size of print? _____ illustrations? _____

time frame? _____ sufficient space for responses? _____

_____ developmentally appropriate?

_____ clear instructions?

_____ relevant activities?

_____ compliance to Alabama Course of Study?

- _____ activities allow for cooperative learning?
- _____ activities meet the needs of all learners?
- _____ activities based on steps of scientific investigation?
- purpose (problem)? _____ hypothesizing (predicting)? _____
- procedure? _____ results? _____ conclusion? _____
- _____ activities allow for student inquiry/discovery/idea construction?
- _____ activities provide hands-on investigation?
- _____ activities of unit arranged in spiraling order?
- _____ appropriate questioning?
- recall? _____ open-ended? _____ integrating? _____
- _____ extension activities provided?

Please rate the student activity materials overall on the following scale:

	1	2	3	4	5	
Poor	_____					Excellent

Comments regarding the student activity materials: _____

_____ (You may use the back of this sheet.)

KIT CONSTRUCTION

- _____ durable?
- _____ exterior well labeled?
- gives grade level? _____ gives contents? _____

_____ adequate materials?

_____ complete materials list?

shows consumables? _____ shows nonconsumables? _____

Please rate the kit by each of the three criteria given below:

Overall kit construction

	1	2	3	4	5	
Poor	<hr/>					Excellent

Quality of objects/materials provided:

	1	2	3	4	5	
Poor	<hr/>					Excellent

Cost effectiveness:

	1	2	3	4	5	
Poor	<hr/>					Excellent

Comments regarding kit construction, quality, or cost: _____

KIT IMPLEMENTATION

During implementation of the kit in the classroom, did the kit:

_____ lend itself well to use of cooperative learning strategies?

_____ generate a high level of interest among the students?

_____ enable you to teach science more effectively?

Please rate the unit **overall** on the following scale:

	1	2	3	4	5	
Poor	<hr/>					Excellent

Comments regarding use of the kit in the classroom: _____

Please submit this evaluation by December 31, 1991 to:

Tereasa Rollings
Madison County Board of Education
P.O. Box 226
Huntsville, AL 35804

Should you have questions regarding this evaluation you may contact me at
852-3522 or 852-2170.

Thanks!

Tereasa